EXTRA INFO. 11/27/06 - 3



ACTON BOARD OF HEALTH

Doug Halley Health Director 472 Main Street Acton, MA 01720 Telephone 978-264-9634 Fax 978-264-9635

November 8, 2006

TO: Don Johnson, Town Manger

FROM: Doug Halley, Health Director

SUBJECT: Illegal discharge to the wastewater treatment system

On Wednesday, November 1, 2006, an illegal discharge was received at the Wastewater Treatment Plant. The discharge contaminated the entire wastewater flow to the extent that the plant exceeded its permit parameters for phosphorus, NH3 and pH (see attached). Brian Bourque, Woodard & Curran's operator did an excellent job of discovering the discharge and taking immediate action to control the permit exceedence. Thanks to them the plant exceeded its permit for only one day.

Woodard & Curran tracked the contamination back to the pump station that services the central school complex. They immediately contacted the Health Department and in turn we contacted J. D. Head from the School Department. Because liquid from the discharge was still in the collection system Woodard & Curran contracted a wastewater pumper to remove as much of the material as possible. In addition, they increased the operation of the aeration blowers and chemical feed systems. Attached with this memo is a summary prepared by Woodard & Curran of the additional costs incurred by this incident.

The School Department staff has been cooperative and professional throughout this incident. They are diligently seeking the cause of the discharge. They have asked for information in regards to when the discharge occurred, what the material might be, and how much of it was discharged.

In response to that, Woodard & Curran has requested that the school provide a list of all the chemicals used at the schools and their quantities. They can then look for potential toxicity issues similar to the material they found. Even with that information it may be difficult to say with surety the discharge came from any one particular material. The Health Department has talked with several wastewater consultants and given the parameters of the discharge, and the likely materials the school would have, their consensus was the material may be similar to a floor stripper.

In regards to the quantity of material discharged it may prove to be impossible to estimate that but given Woodard & Curran's observations it either had to be highly concentrated or of a significant quantity. It is highly unlikely that it was a material used in a process and then discharged. It is more characteristic of a product that was unused before being discharged. Given the pumping sequence of the Pump Stations the discharge most likely occurred between 8:00 A.M. and Noon. It would seem unlikely that access to clean outs or manholes on the school property would occur during that time period without being noticed, therefore this material most likely came from one of the buildings on the campus.

Unfortunately, this is the fourth time the sewer has received a significant illegal discharge from the Central Campus since the fall of 2001. Each time the school staff has been very cooperative in trying to determine the cause and responding to additional costs. The department is sure that they are just as frustrated as we are by the repetitive nature of these problems. The causes have ranged from contractors releasing materials during the construction of the Twin School, a boiler break down at the Jr. High and maintenance issues with cleaning materials at the schools.

Other than the discharges at the Central Campus the department has only been able to identify one other probable violation. In the spring of 2003 the quantity and character of the wastewater at the Railroad Street pump station changed in a way that was indicative of an illegal discharge of septage. At the time we alerted the police department to be aware of suspicious activity near the pump stations but we were never able to find the responsible person for the discharge. No other illegal discharges have been observed.

The illegal discharges at the Central Campus have not only been inappropriate liquids but also solids which have disabled the pumps at the Charter Road Pump Station. These releases of inappropriate or excess solids started having an impact about six months ago and have been recurring regularly since then. This has increased the necessary amount of maintenance of both the pumps and the pump station. Attached is an email that details \$660 of additional costs incurred due to that issue.

Due to the variety of problems that have occurred at the Central Campus the department believes that a plan needs to be put in place that addresses these problems. During the past few months we have been working with Woodard & Curran in developing a plan that addresses the discharges of inappropriate solids like portions of mop heads. The school has been receptive to taking action on this issue. With this latest problem the department asked Woodard & Curran to develop a proposal that addresses these issues (see attached).

Clearly the measures Woodard & Curran recommends are costly and may cause an undue financial burden on the Schools. Therefore after due consideration the department recommends the following:

- 1. The School Department shall reimburse the Town for all costs attributed to correcting the problems associated with the illegal discharges of April 23, 2006 and November 1, 2006.
- 2. The School Department shall develop an emergency response plan that would delineate an on-site investigation of all manholes for each school whenever an

illegal discharge is discovered. This investigation would be implemented as soon as the schools are informed of a probable illegal discharge or if they discover it through their own means. The purpose of this plan is to focus on the location where a discharge may occur and to ensure that corrective action is taken at that location. A written copy of the emergency response plan shall be submitted to the Health Department. Implementation of the plan shall also include notification of the Town and any reports generated from an investigation shall be copied to the Town.

- 3. As per Woodard & Curran's recommendations an audit of the school facilities for potential materials and piping configurations that could harm the Wastewater Treatment Facility and collection system shall be done. The audit would be followed by training the maintenance staff and posting signage regarding proper disposal of items found in the school. By educating the staff on appropriate methods of disposal and by eliminating access points for large solids many of these problems can be proactively avoided in the future. (The Town has Two Household Hazardous Waste Days each year. We would be more than happy to allow the School Department to piggyback on the event for potential cost savings in removing hazardous materials from their inventory)
- 4. As an alternative to Woodard & Curran's second recommendation the school shall retain a consultant to develop a plan of action that delineates daily actions and monitoring that will be undertaken to ensure improper solid discharges do not reach the Charter Road Pump Station. Should the implementation of this plan fail to address this issue the school should then proceed forward with Woodard & Curran's recommended tank installation.
- 5. The Department believes that Woodard & Curran's third recommendation should be held in abeyance as long as no future illegal discharges occur. In the event of an illegal discharge occurring that impacts the proper operation of the wastewater treatment plant this recommendation would then be implemented.

Finally, attached please find a draft Sewer Regulations and Bylaws, which update, clarify and improve the current regulations. Town Counsel has reviewed these regulations and they are now ready for the Selectmen's consideration. Adoption of these regulations will help to clarify what are illegal discharges and delineate responsibility for those discharges.

Pump Station	Total Phos	NH3	рН
1	Over range	39.1	7.4
4	Over range	Over range	8.4
5	Over range	Over range	8.3
6	3.7	23.1	7.6

COMMENTS:

COMMENTS:
Typical Influent total phosphorus is 8-12 mg/L. The tests performed could measure up to
17.5 mg/L. As stated in the data boxes, total phosphorus was over 17.5 mg/L.
Typical Influent NH3 is 30-60 mg/L. The tests performed could measure up to 60 mg/L
As stated in the data boxes, NH3 was over 60 mg/L.
pH above 8 is a good indicator that something other than domestic wastewater is present.

∟abor	
John Parkhurst	\$720 12 hours overtime beyond normal working hours including weekend coverage
3rian Bourque	\$262 4 hours overtime beyond normal working hours
	11-3-06 There will be additional overtime this weekend to run lab work and this will be updated accordingly. 11-6-06 update
Hauler	\$900 tentative write up at the time of service
Chemicals	
Alum	\$388 This is what we have used to remove phosphorus above and beyond what we normally use as of Monday, 11-6-06.
Soda ash	\$108 This is what we have used to maintain the SBR pH above and beyond what we normally use as of Monday, 11-6-06.
	11-3-06 These costs will need to be updated as the next few days roll forward. We can't just assume all is well and put all the chemical settings back to what we consider normal. This reduction is a slow process and I anticipate that by mid week next week if all goes to plan, we should be back to normal doses. 11-6-06 update
Power	The electric bills for the additional blower runs will be on the invoice I get next month.
Laboratory Supplies	\$210 Lab test kits for the spectrophotometer were used up during the multiple tests required to see what was going on. 11-6-06 update
Extra sludge from	\$600 This is the tail end of the operation. Cost here is a very rough estimate on an extra 1/2 load produced due to High Alum dose
High Alum dose	throughout the remainder of November. I will have a much better idea when we begin processing this sludge.
Tentative Total	\$3,188

November 8, 2006

Mr. Doug Halley, Health Director Town of Acton 472 Main Street Acton, MA 01720

Re: Charter Road Pump Station #5

Dear Mr. Halley:

As you are aware, there was another process upset at the wastewater treatment facility last week causing a notification to the Massachusetts DEP. The operators at the Acton Wastewater Treatment Facility (WWTF) determined that significant volumes of a phosphorous-based liquid entered the sewer system from the Charter Road Pump Station, which collects wastewater flows from the School complex. This process upset and reportable condition is the most recent event in a chain of non-typical sewer flow occurrences at the school complex.

To remedy this situation, Woodard & Curran recommends that the school complex consider several proactive actions to reduce the risks of process upsets or worse, sanitary sewer overflows. We have prepared a brief summary of actions described below, each with a budget estimate, are recommend that the Town and school complex consider each carefully.

- 1. Education and Training. W&C recommends an audit of the school facilities for potential materials and piping configurations that could harm the Acton WWTF and collection system were they to enter toilets, sinks, floor drains, or other access points on the system. The audit would be followed by training the maintenance staff and posting signage regarding proper disposal of items found in the school and prepared recommendations of alternative environmentally sensitive products. By educating the staff on alternative methods of disposal and by eliminating access points for large solids, many of these issues could be proactively avoided in the future. Estimated Budget: \$6,000
- 2. Physical Separation of Solids. W&C recommends that the school complex install a "solids tank" for separation of non-degradable materials prior to the Charter Road Pump Station. This pump station often clogs and requires frequent maintenance. A solids tank, sometimes called a trash tank, is similar to a large septic tank in design and would mainly serve to remove plastic, cloth, and other non-degradable items from the wastewater stream before the pump station. To date non-typical materials such as mop heads and trash bags have been manually removed from the pumping station. Figure 1 (enclosed) shows the plan and profile for the proposed trash tank at the Charter Road Pump Station. We believe that a solids tank is the best option for the school to be responsible for maintenance without needing access to the inside of the Pumping Station. The challenge of the solids tank is that it is a deep structure installed in a small footprint adjacent to Charter Road. Estimated Budget: \$75,000 including design, permitting, purchase and installation.
- 3. Real-Time pH and Nutrient Monitoring. To date, the Acton WWTF Operators have used pH and nutrient characteristics of the raw wastewater in the pumping station to track possible sources of illicit discharges, such as the sodium glycol discharge in 2002 or the phosphorus plume last week. W&C recommends that the school complex budget to install real time monitoring and reporting devices at the pumping station to analyze for pH, nitrogen, and phosphorus in real time. These devices would



be connected into the Town's I-Net SCADA system will notify the Operators of low pH or high levels of nitrogen or phosphorus and therefore give the Operators time to adjust the treatment methodology at the WWTF. This solution still is a reactive measure, but it will allow real time communication about any plumes of nitrogen or phosphorus, and may allow the source to be tracked more quickly. Estimated Budget is as follows:

On Line Nitrogen / Phosphorus Analyzer purchase	\$25,000
On Line pH Analyzer purchase	\$5,000
Sample pump and piping	\$11,000
Electrical installation, equipment and wiring	\$9,000
Local I/C integration and programming	\$9,000
Modifications to Town's I-NET SCADA System	\$7,000
	\$66,000

We understand these issues have been an ongoing topic of discussion for several years and we again encourage the Selectmen and School Committee to make the issue a priority. The continuous financial burden of emergency maintenance costs are the tangible impacts of the current condition but the environmental risk of a station failure causing a sewerage overflow should not be devalued. We strongly recommend the Town take the appropriate action to reduce these manageable risks.

If you have any questions or require additional information, please do not hesitate to contact our office.

Very truly yours,

WOODARD & CURRAN INC.

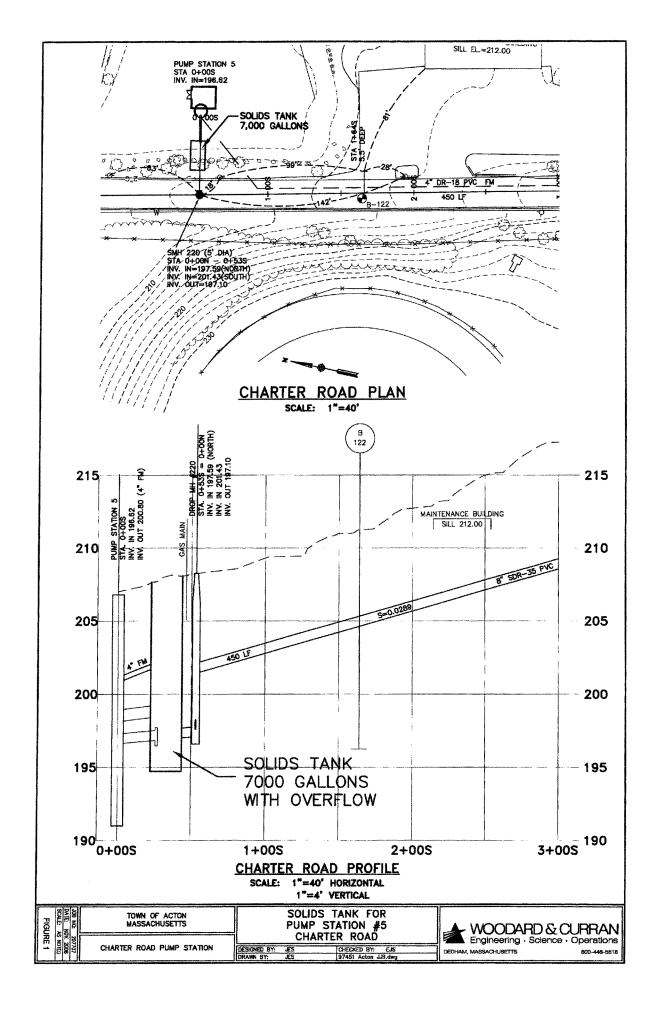
Joseph D. Shea, PE Project Manager

JDS/ejs 207707

Attachment

Cc: Bruce Stamski, Director of Public Works

Bill Luksha, Woodard & Curran Brian Bourque, Woodard & Curran Helen Gordon, P.E., Woodard & Curran Emily Scerbo, Woodard & Curran



Doug Halley

From:

Doug Halley

Sent:

Thursday, April 27, 2006 1:34 PM

To:

Don Johnson

Cc: Subject: John Murray; Bruce Stamski FW: Pump # 1 @ pump station 5







PS#5042406 003.jpg (792 KB) PS#5042406 005.jpg (1 MB) PS#5042406 004.jpg (623 KB)

Attached please find new information regarding additional impacts from the school department's wastewater discharge to the pump station. I have asked Woodard & Curran to develop a proposal that would inhibit this type of discharge from impacting the system. Do you want to wait until they have the proposal before the information is sent to the Sewer Commissioners? Please refer to a second email in response to this issue from J. D. Head.

----Original Message----

From: Brian Bourque [mailto:bbourque@woodardcurran.com]

Sent: Thursday, April 27, 2006 12:11 PM

To: Doug Halley; Bruce Stamski; jd head@mail.ab.mec.edu; Brent Reagor

Cc: Eric Teittinen

Subject: Pump # 1 @ pump station 5

Sunday, April 23, 1:00 pm, a routine remote check of the facility and collection system was conducted. Pump #1 at pump station #5 was found running and not producing flow. At this time, the pump was disabled, pump #2 was put online, and flow resumed. Monday morning, we found pump #1 was ceased and the drive belts were broken off. After disassembling the pump and removing the core, debris was found behind the impeller and in the seal area of the pump. Three photos attached show where some of the debris is sticking out from between the impeller and the backplate. This backplate is part of the casing for the seal. The core of the pump was taken to Hayes Pump along with a replacement seal. Technicians installed a new seal that day and the core was reinstalled at the station. Drive belts were ordered and installed Thursday, April 27, by 9:00 am. The pump was put back in service and is functioning properly at this time.

Costs for this incident:

Labor \$350 for 10 total hours for 2 operators

Parts \$270 for a mechanical seal

\$40 for drive belts

Total \$660

Thanks, Brian